A Community Profile of the Lower Ninth Ward Neighborhood: A Case Study for hazard mitigation strategies

Introduction

The Lower Ninth Ward consists of two distinct neighborhoods, Holy Cross which is a Federal National Historic designated neighborhood and the Lower Ninth Ward. Prior to the devastating impacts of Hurricane Katrina on August 29th, 2005, the neighborhood was rich with small businesses, barber and beauty shops, corner stores, eateries, day care centers, public schools, and many churches. It has a resilient history of survival and activism.

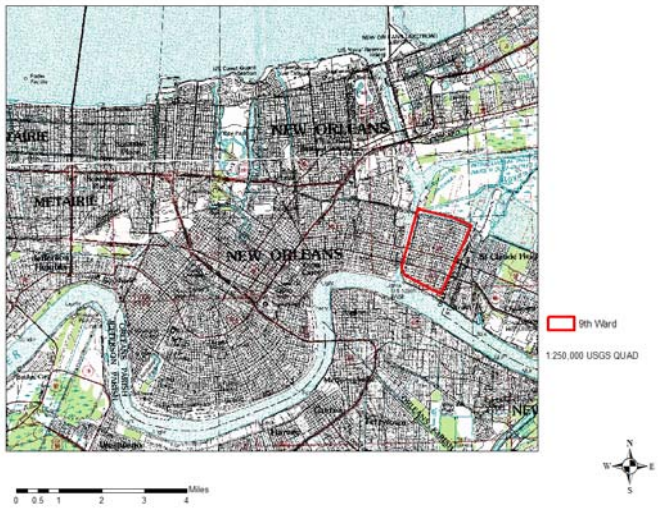

Figure #1: New Orleans and the Lower Ninth Ward Area

The Lower Ninth Ward was among the very last of the city's neighborhoods to be developed in New Orleans. On the western boundary, it is bordered by the Industrial Canal which was opened in the early part of the Ninth Century and separates the Lower Ninth with the City of New Orleans. On the South is the railroad which links the chemical industrial corridor of St. Bernard Parish with New Orleans the Gulf region. On the North it is bordered by Florida Avenue and marshes and wetlands. It is called the Lower Ninth in relation to the Upper Ninth since it is downriver from the City of New Orleans.

Prior to development, the area was originally a cypress swamp and included as part of plantations that stretched from the Mississippi River to Lake Pontchartrain. African Americans and immigrant laborers from Ireland, Germany and Italy desperate for homes and very limited incomes and unable to afford housing in other areas of the city risked the hazards that came with low lying areas and moved to the area.

Figure #2: The Lower Ninth Ward Neighborhood

In 1834-35, the U.S. government constructed the Jackson Barracks, which today is on the National Register of Historic Places. The barracks now serves as headquarters for the Louisiana National Guard and houses the Jackson Barracks Military Museum. Figure #2 shows the location of Jackson Barracks and its position in both the Holy Cross and Lower 9th Ward. The Barracks are also in the Holy Cross neighborhood which is listed on the National Historic Districts.

In the 1870s, several African American benevolent associations and mutual-aid societies organized to assist scores of struggling freedmen (formerly-enslaved Africans) in the area. Figure #3 shows the Holy Cross neighborhood from the Department of Interior 1890 QUAD map. Note the swamps just north of both the Holy Cross and Biwater historic neighborhoods.

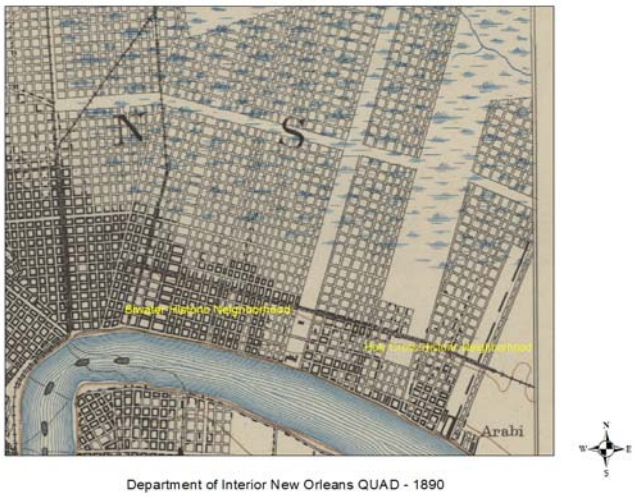

Figure #3: Holy Cross Neighborhood – 1890 QUAD

Hazard Mapping and Modeling

Although legislation was passed in 1899 for drainage and pumping system in New Orleans, it was not until between 1910 and 1920 that the City of New Orleans installed drainage systems for much of this part of the City. Canals were part of the City's drainage system but also viewed for economic development. A canal later known as the Industrial Canal was proposed to connect the Mississippi River to Lake Ponchartrain. Construction began in 1918 and was completed in 1923. Figure #4 shows the Industrial Canal with the lock close to the Mississippi River. The lock was constructed as part of the Industrial Canal and was viewed as an engineering landmark, one of the largest locks in the nation at the time and abuilt upon soils far less stable than any previous project of this type. The lock has to be strong to withhold the Mississippi River's range of river stages which could rise to over 25 feet. The Canal further isolated the Lower Ninth from the City (Campanella 2002). The Lock and the Industrial Canal are shown on Figure #4 below.

Figure #4: Industrial Canal: 1932 QUAD

The new canal was selected because: 1) it was within the Orleans Parish limits, 2) within a narrow strip between the Mississippi River and Lake Pontchartrain; 3) mostly undeveloped; 4) convenient to existing shipping lanes and port activities; and 5) either owned by the City or readily acquirable (Corps 1994). The canal was viewed as a major industrial development effort to support shipbuilding sites within a protected, fixed level harbor. It would create new space for facilities to handle, store and transport cargo. Figure #5 shown below highlights the Lower 9th Ward Neighborhood, just East of the the Industrial Canal, and North of the Mississippi River.

Figure #5: Industrial Canal and the Ninth Ward

Despite the lack of dependable city services (sewerage, continual drainage and water distribution) many people moved to the Lower 9th for an affordable place to live and to be near the emerging industrial sites along the river. Residents were attracted by the rural feel of the area and a contrast to the crowded city neighborhoods of New Orleans. Figure #4 shows the small developed footprint as of 1932.

Figure #6: The Lower 9th Ward before Hurricane Katrina

By 1950, only a portion the Lower Ninth Ward had been developed. Development was along the docks of the Industrial Canal and an emerging residential neighborhood. Figure #6 above shows some of the home constructed in the neighborhood. In the late 1950s, a second bridge between the City and the Lower Ninth Ward was built across the Industrial Canal at Claiborne Avenue. Retail development along St. Claude Avenue became notable during this period and the trend of small businesses continued. By 1965 commercial activity along St. Claude continued to grow and industrial development grew along the Industrial Canal between Claiborne and Florida Avenues.

Prior to Hurricane Katrina, the neighborhood was rich with small businesses, barber and beauty shops, corner stores, eateries, gasoline stations, day care centers, as well as public schools and many churches. One of those first schools was McDonogh #19, now called Louis D. Armstrong Elementary, on St. Claude Avenue. Three Head Start programs operated in this community of New Orleans. Many noted artists come from this neighborhood including the legendary great, Antoine Domino, Jr., known as Fats Domino, the Lastie family, and Kermit Ruffins. Figure #7 below shows the City's classification as applied to the Lower 9ths prior to Katrina and Rita.

Figure #7: Zoning Classification for the Lower 9th Ward

Hurricane Betsy

In September 1965, Hurricane Betsy struck New Orleans and a total of eighty-one people lost their lives in the City. Eighty percent of the Lower Ninth Ward district was under water. At that time, the levee was eight feet high and the storm surge was ten. As with Hurricane Katrina forty years later, people walked through water to escape the water; others had to be rescued from their rooftops. Many residents viewed Hurricane Betsy as the beginning of the downward turn for the neighborhood.

Figure #8: Flooding following Hurricane Betsy in the Lower Ninth Ward

Model Cities

During the 1960's, the United States Congress adopted legislation (Demonstration Cities and Metropolitan Development Act) to improve the general welfare of distress neighborhoods in urban areas. Services included educational and social services vital to health and welfare. Through the Model Cities program, employment in the Lower Ninth Ward increased and revitalization occurred as agencies were established to assist and encourage metropolitan development. The Lower Ninth Ward was one of three New Orleans neighborhoods affected. Out of those agencies established between 1969 and 1975, a few remain in operation until they were displaced by Hurricane Katrina, including the Lower Ninth Ward Neighborhood Council, Total Community Action's Lower Ninth Ward Head Start Program, the Lower Ninth Ward Housing Development Corporation and the Lower Ninth Ward Health Clinic.

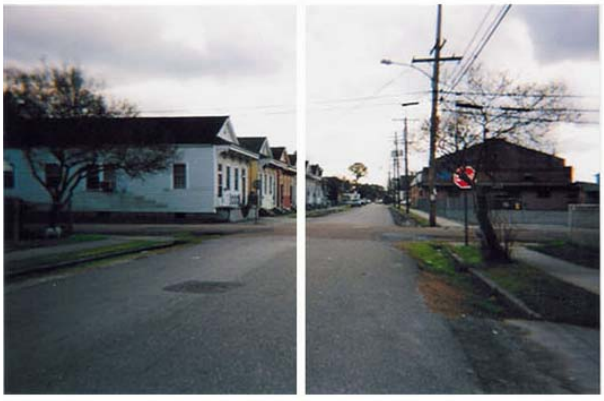

Figure # 9: Lower 9th Ward prior to Katrina

Hazard Mapping and Modeling

Prior to the destruction of Hurricane Katrina, the U.S. Corps of Engineers submitted and had approval for the Industrial Canal Lock Replacement Project. Although funding was not allocated for the project, the project would replace the locks with larger facilities. It has been a controversial issue between the area's residents and the Corps since the 1970s. The Lower Ninth Ward stood to be the neighborhood most affected by the Industrial Canal Lock Project since the actual facilities replacement would occur between Claiborne and Florida Avenues and the bridges that flank the area. Local activists organizations including the Association of Community Organizations for Reform Now (A.C.O.R.N.), the American Civil Liberties Union (ACLU), and All Congregations Together (A.C.T.) worked to delay or halt the project. Plans to initiate the project were scrapped as a result of Hurricane Katrina.

Hazard Mitigation Strategies

The Lower 9th Ward presents an opportunity to rebuild, restore, and recover in a sustainable manner from Hurricanes Katrina and Rita. The following hazard mitigation strategies provide a framework for reducing risk and harm to our built, natural and social environments. Review the measures and determine if you can apply these strategies in the Lower 9th Ward situation. Review the Hazard Mitigation Strategies and then take a look at the 2000 Census statistics. Demographic profile provides a solid basis for understanding who comprised this community and a basis for examining neighborhood sustainability (*Brower, D. (1997)*. See if you can identify these strategies in the figures and displayed included in this case study of the Lower Ninth Ward and observations and recommendations prepared by Landscape Architecture students at LSU who proposed recovery efforts not only in the neighborhood immediately after the storm but for moths as City residents attempted to rebuild and recovery.

I. Structural Measures

A. Alteration of Environment.

1. Sediment-trapping or movement (jetties, beach nourishment or dredging)
2. Shoreline Protection Works including seawalls, revetments, bulkheads, breakwaters, or construction or stabilization of sand dunes.
3. Storm water Management
4. Drainage System Maintenance
5. Flood Control Works including dams and reservoirs, dikes and levees, retaining ponds, flood channels, or floodwalls
6. Slope Stabilization
7. Brush Clearing, Controlled Burns, Fuel Breaks
8. Wetland Preservation and Riparian Habitat Protection

B. Strengthening Buildings and Facilities

1. Flood proofing
2. Elevating
3. Wind proofing

4. Basement Protection
5. Seismic Retrofitting and Design
6. Burial of Utility Lines
7. Improvements to storm water, water treatment facilities, or pump stations
8. Upgrading Piers/Wharves
9. Repair/Reconstruction of Fuel Storage Tanks

C. Building Codes
1. Freeboard
2. Foundation Design
3. Wind Standards
4. Cumulative Substantial Improvement
5. Lower Substantial Improvement
6. Critical Facilities
7. Enclosure Limits
8. Electrical and Mechanical Equipment

II. **Non-structural Elements**

A. Development Management
1. Planning
2. Development Regulations
   a. Zoning
   b. Growth Management Techniques
   c. Local Environmental Impact
   d. Subdivision Regulations
3. Land and Property Acquisition
   a. Acquisition of Undeveloped Land
   b. Relocation of Existing Development
   c. Purchase of Development Rights/Easements
   d. Transfer of Development Rights
   e. Advance Site Acquisition (Land Banking)
   f. Purchase Sellback/Leaseback
   g. Purchase Option (Right of First Refusal)
4. Land Use Policy
5. Moratoria
6. Reconstruction Triage

B. Information Dissemination.

C. Real Estate Disclosure Requirements
   1. Community Awareness Programs
   2. Hazard Disclosure

III. **Private Sector Involvement.**

A. Influence of the financial industry

B. Insurance
C. Building industry

[Source: Brower, D. (1997). Planning to Mitigate the Impacts of Natural Hazards in the Caribbean: A Training Program. S. Stichter. Unpublished, Department of City and Regional Planning, University of North Carolina at Chapel Hill.]

Demographics of the Ninth Ward Neighborhood

Population statistics for the Ninth Ward neighborhood were obtained from the Census Bureau and provide a basis for understanding the nature and character of this community. Given the devastating impact of Hurricane Katrina and Rita on this community, the tables should be examined to understand who lived in this area and how can this community be restored, rebuilt and recover in a sustainable manner.

Demographics

Table #1

People & Household Characteristics

Total numbers (2000)	**Lower 9th Ward**	**Orleans Parish**	**Louisiana**	**United States**
Populati0n	14,008	484,674	4,468,976	281,421,906
Total Households	4,820	188,251	1,645,053	105,480,101
Family Households	3,467	112,977	1,156,438	71,787,347
Female	53.7%	53.1%	51.6%	50.9%
Male	46.3	46.9	48.4	49.1
AGE				
5 Years & Under	9.3&	8.4&	8.5&	8.2%
6-11	10.9	9.2	9.2	8.9
12-17	10.5	9.1	9.5	8.6
18-34	21.6	25.9	24.3	23.8
35-49	19.8	21.9	22.5	23.2
50-64	13.9	13.8	14.5	14.9
65-74	7.6	6.0	6.3	6.5
75-84	4.9	4.2	3.9	4.4
85 & Older	1.5	1.5	1.3	1.5
Race				
Black	93.3%	66.6%	32.3%	12.1%
White	0.5%	26.6%	62.6%	69.2%

NOTE: The Census definition of family is people living together who are related... by birth, marriage, or adoption." In contrast, the definition of household is "all the persons who occupy a housing unit.

Housing
Table #2

Neighborhood Characteristics Total numbers (2000)	Lower 9th Ward	Orleans Parish	Louisiana	United States
Urban	100%	99%	72%	79%
Lived in the house In 1995	73.6%	56.8%	58.1%	53.0%
Liven in different House in N.O. in 1995	24.1%	32.6%		
Housing				
Occupied housing	86.1%	87.5%	89.7%	91.0%
Vacant housing	13.9	12.5	10.3	9.0
Owner Occupied	59.0	46.5	67.9	66.2
Renter Occupied	41.0	53.5	32.1	33.8
Housing Age				
Built 1999- 3/2000	0.6	0.4	2.2	2.4
1995-1998	1.3	1.3	6.7	7.3
1990-1994	1.0	1.3	5.7	7.3
1980-1989	5.6	8.2	18.4	15.8
1970-1979	8.2	13.6	22.4	18.5
1960-1969	21.0	15.1	16.3	13.7
1950-1959	31.8	16.9	12.8	12.7
Built 1949 or earlier	30.5	43.2	15.5	22.3
Occupancy Turnover				
Moved 1999–3/2000	12.6	20.6	18.7	19.9
1995-1998	20.8	28.5	26.9	28.9
1990-1994	12.7	15.9	15.6	16.1
1989 or earlier	53.9	35.0	35.8	35.1
Mortgage Costs				
Units with mortgage	1,262	58,667	643,900	47,065,828
Less than $499	21.1%	8.0%	16.5%	13.5%
$500 – 999	61.1	50.1	53.6	38.4
$1,000 or more	15.8	41.9		

Housing and Income
Table #3

Housing Affordability				
Units	4,427	174,735	1,390,532	90,411,610
Owner costs of 30% or more of household or income	39.8%	35.9%	25.2%	27.7%
Owner costs less than 30% of household income	52.9	57.7	68.7	68.9

Note: Census data can be used to determine how many households might be struggling to meet the costs associated with housing. There is no "magic number" to determine whether housing is affordable or not. According to conventional mortgage underwriting guidelines, the maximum amount of gross income that can be used for mortgage payments alone is 28%; the total for all debt payments including projected mortgage payments is 36%. The 28% threshold does not include other housing costs such as homeowner's insurance, taxes and utilities, and the 36% number includes non-housing costs such as credit card debt and car payments. The closest number published by the Census is whether households are paying 30% or more of income on housing.

Income				
Wage and Salary	67.2%	73.3%	75.4%	77.7%
Self-employment	5.4	8.7	9.8	11.9
Social Security	35.8	24.7	25.2	25.7
Supplemental Security	14.5	7.8	6.1	4.4
Public Assistance	8.3	5.4	3.3	3.4

Transportation, Employment, Education & Disability
Table #4

Transportation				
Total numbers (2000)	**Lower 9th Ward**	**Orleans Parish**	**Louisiana**	**United States**
Occupied housing units	4,820	188,251	1,656,053	105,480,101
No vehicle	32.4	27.3	11.9	10.3
1 vehicle	42.3	42.3	37.0	34.2
2 vehicles	18.0	24.2	38.0	38.4
3 vehicles	7.3	6.2	13.1	17.1
Type of Transportation to Work				
Workers 16 & >	4,007	188,703	1,831,057	128,279,228
Public Bus	17.4	12.4	2.1	2.5
Car, truck or van	76.2	76.3	91.7	87.8
Walked	2.8	5.2	2.2	2.9

Employment				
Population 15 >	10,122	370,138	3,394,546	217,168,077
Not in labor force	52.1%	42.2%	40.6%	36.1%
Armed Forces Employed Unemployed				
Education				
Total 18 & >	9,720	355,507	3,250,523	209,279,149
Less than 9th Grade	11.0%	7.2%	8.4%	7.1%
9- 12th Grade	29.1	18.2	17.2	13.2
High school diploma Or GED	29.7	24.0	32.0	28.6
Some college	24.2	27.5	25.6	28.8
Bachelor's degree Or higher	6.0	23.1	16.8	23.3
Public vs. Private Enrollment K-12				
Total pop. K-12	3,421	99,990	923,702	54,192,083
Public School	91.9	81.9	83.1	89.3
Private School	8.1	18.1	16.9	10.7
Disability				
Non-institutionalized pop. 5 & over	12,899	440,111	4,045,963	257,167,527
With disability	30.9%	23.2%	21.8%	19.3%
Without disability	69.1	76.8	78.2	80.7

Note: The Census Bureau categorizes disability by sensory, physical, mental and self-care. For non-institutionalized 16 to 64 population, they provide employment disability statistics. For those 16 and over, they also provide "go outside home disability" statistics. For additional information on these breakdowns see: http://www.gnocdc.org/orleans/8/index.html

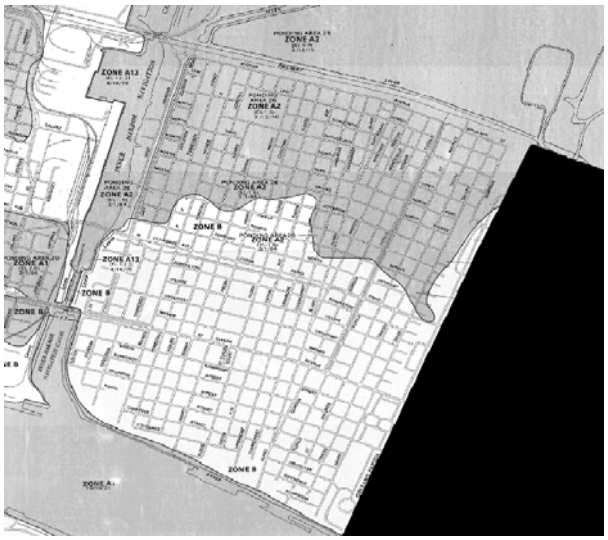

Figure #10: 1984 FEMA FIRM

There are many ways to describe hazards. The FEMA FIRM provides a sound basis for describing risks associated with flooding.

A Design Perspective of the Lower 9th Ward

The following analysis and displays were created by students from a senior level design studio under the direction of Dr. Bruce Sharkey, Professor, School of Landscape Architecture at Louisiana State University. The displays were developed as a part of their Fall 2005 class and are intended to provide illustrations of both their perspectives on the local geography, the Hurricane Katrina physical impacts, and possible community designs. Dr. Sharkey asked the students after Katrina if they would like to study neighborhoods in New Orleans impacted by the disaster and use this event as a basis for their course for the semester. Their work products included in this case provide us with excellent examples of their views of the physical environment and potential applications of mitigation strategies for a community that his been so severely impacted by a devastating disaster. The analysis and design recommendations were prepared by Justine Lemoine and senior in Landscape Architecture who will graduate in May of 2006 from LSU.

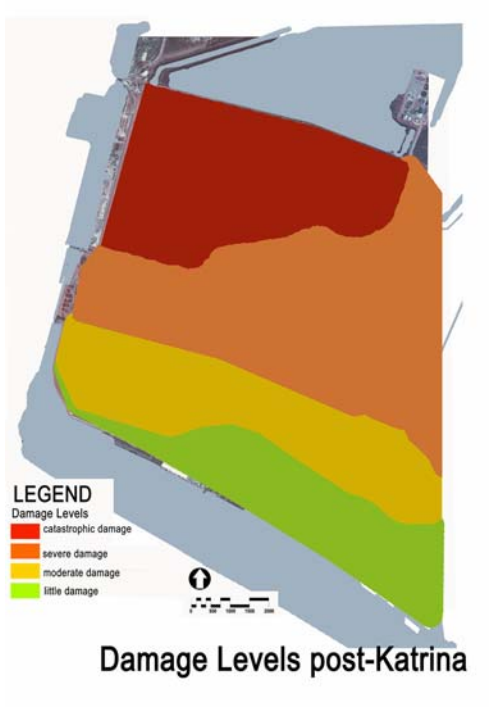

Figure #11: Damage Estimates from Hurricane Katrina (9/2005) (Justine Lemoine, LSU)

Figure #11 provides a basis for the proposed design plan for the Lower 9th Ward. These classifications were general observations and intended to provide a framework for the proposed design. The estimates were not provided by FEMA but were estimates based on elevation contours. The area was divided into the following classifications:

- Little Damage
- Moderate Damage
- Severe Damage
- Catastrophic Damage

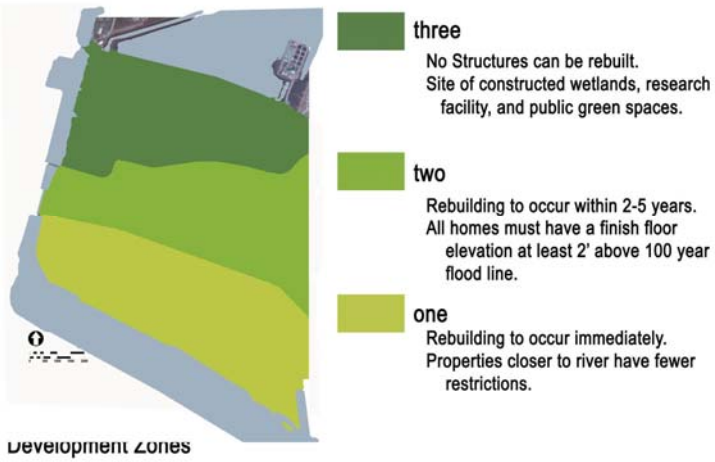

Figure #12: Restoration Classifications for the Lower 9th Ward (Justine Lemoine, LSU)

The proposed restoration of the Lower 9th Ward is centered on three classification zones that reflect the hazards posed by hurricanes and flooding. Zone #1 is closest to the Mississippi River to the South of the neighborhood. It is on the highest ground and had limited flooding in Hurricane Katrina. Zone #2 lies in the center of the Lower 9th Ward. Homes and commercial property built in this area would be elevated at least 2 feet above the new FIRM base elevation which are expected in the Spring of 2006. Zone #3 faces the greatest risk from flooding and storm surge. No structures are proposed for this area

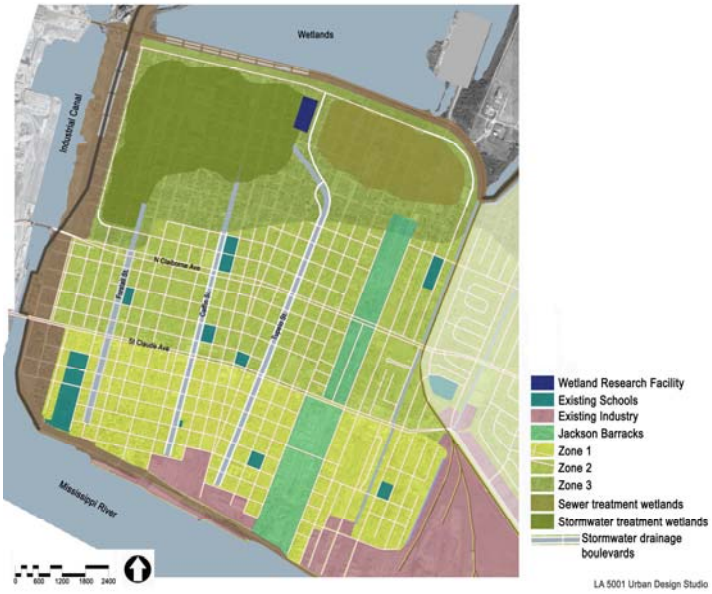

Figure #13: Design Plan and Classification Zones (Justine Lemoine, LSU)

Figure #14: Boardwalk in Zone 3 (Justine Lemoine, LSU)

Figure #15 shows a proposed boardwalk in Zone three which is in the lowest areas of the Lower 9th Ward. This area would feature natural areas that would include both areas for storm-water runoff and passive sewer treatment wetlands. Figure #16 shows the current rail line that exists in the area connecting the industrial sites South of New Orleans with the port and transportation network facilities in the City of New Orleans.

Figure #15: Existing Rail line crossing the Lower 9th Ward (Justine Lemoine, LSU)

Figure #16: Proposed Drainage Area in Zone 3 (Justine Lemoine, LSU)

Figure #17: Proposed Wetlands in Zone 3 (Justine Lemoine, LSU)

Figure #12 shows three storm water drainage boulevards that utilize the city streets for runoff. This passive approach to directing water from populated parts of the neighborhood allows for good drainage and minimize damage to homes and commercial properties. The elevated homes in Figure #18 are to provide a perspective on the overall approach to rebuilding and mitigating damage in future flood events either from hurricanes or extreme rainfall events. Many residential structures in the 9th Ward were flooded by Hurricane Betsy and then many years later by Hurricanes Katrina and Rita. These proposed designs provide some idea of sustainable designs.

Figure #18: Proposed Elevated Housing in the Lower 9th Ward (Justine Lemoine, LSU)

The layout design of the neighborhood raises questions of available property for single family residences. The status of residential and multi-family structures in neighborhoods is a matter of interest for the census. Figure #20 provides a look at the available areas in the Lower 9th Ward and the potential for moving elderly residents who would not be able to climb stairs as shown in the designs in Figure #19.

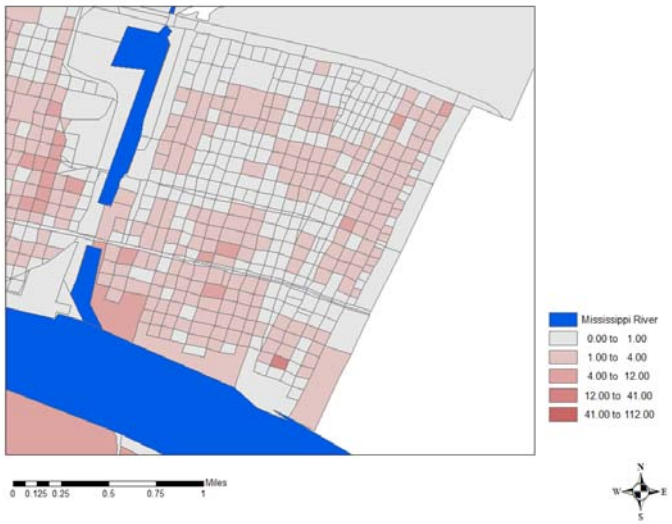

Figure #19: Vacant Single Family Residential Properties

Note in Figure #19 the concentration of single family properties that are vacant in the Lower 9ths Ward. It may be surprising to many the few vacant properties that existed in the Lower 9ths prior to the landfall of Hurricanes Katrina and Rita. The data collected by the Census Bureau suggests that Lower 9th residents might be able to move to areas that are much less vulnerable to flooding. Figure #20 shows the extent of flooding in the Lower 9ths Ward following Katrina.

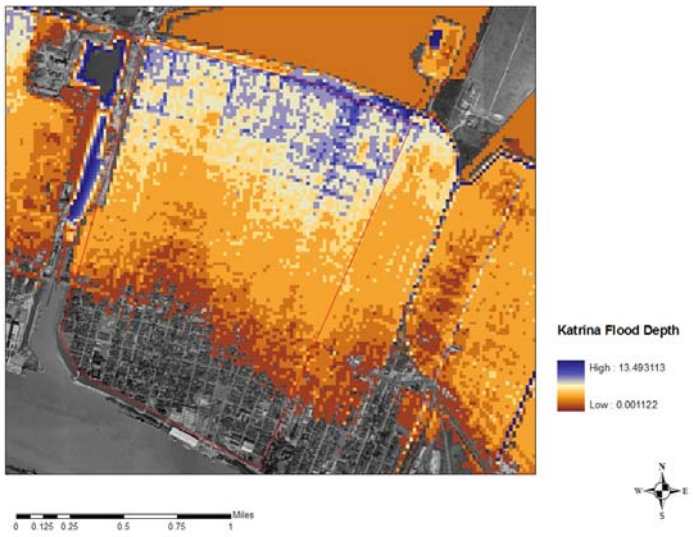

Figure #20: Flooding in the Lower 9th Ward following Hurricane Katrina

Figure #21: 9th Ward Ground View Post Hurricane Katrina (Photos by John Pine, LSU)

Figure #22: 9th Ward Ground View Post Hurricane Katrina (Photos by John Pine, LSU)

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